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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/877,961	06/08/2001	Anthony J. Ruggiero	IL-9928	2189

7590 03/25/2004

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EXAMINER
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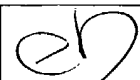
OLSEN, KAJ K

ART UNIT	PAPER NUMBER
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1753

DATE MAILED: 03/25/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

<p align="center"><b>Office Action Summary</b></p>	<b>Application No.</b> 09/877,961	<b>Applicant(s)</b> RUGGIERO, ANTHONY J.	
	<b>Examiner</b> Kaj Olsen	<b>Art Unit</b> 1753	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
  - If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
  - If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
  - Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 22 December 2003.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-35 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 28, 29 and 33-35 is/are allowed.
- 6) ☒ Claim(s) 1-12, 15-24, 27 and 30 is/are rejected.
- 7) ☒ Claim(s) 13, 14, 25, 26, 31 and 32 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |                                                                                                                        |                                                                                         |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                            | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____                                                |

DETAILED ACTION

*Claim Rejections - 35 USC § 103*

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-12, 15-20, 24, and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bornhop (USP 6,381,025 B1) in view of Faubel et al (Opt. Eng. 35(12) pp. 3555-3561).

3. Bornhop discloses a sensor system that comprises a separation channel 22, at least one interferometer (col. 4, line 66 through col. 5, line 16), at least one excitation beam (col. 8, lines 64-66), at least one light source 12 and at least one photo receiver 25 (col. 5, lines 35-52).

Bornhop does not explicitly disclose making the excitation beam to be modulated. Faubel discloses in an alternate interferometer that making the excitation beam modulated allows one to lock-in to the detected signal, which improves signal analysis (fig. 1 and p. 3557). It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Faubel for the sensor system of Bornhop in order to improve signal analysis.

4. With respect to the different uses of the separation channels, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability. However, see Bornhop abstract and Faubel introduction.

5. With respect to the rate of chopping, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

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6. Faubel also teaches the use of argon ion lasers for the excitation beam (p. 3557, col. 1, first full paragraph).

7. With respect to the appropriate optical path distance or choice of laser frequency, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the set forth path distance and laser frequency, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

8. With respect to claims 17, 19, and 24, these claims merely recite an intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

9. With respect to claim 18, white light is a conventional light source that is less expensive than the lasers of the references. Use of a more inexpensive source of light requires only routine skill in the art.

10. With respect to method claim 30 (those limitations not covered above), Bornhop is drawn to the measuring of refractive indexes (col. 2, lines 37-51).

11. Claims 1-12, 15, 17-20, 24, 27 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Krattiger et al (*Anal. Chem.* 1994, 66, pp. 1-8) in view of Faubel. Krattiger is being cited and relied on for the first time with this office action.

12. Krattiger discloses a sensor system comprising a capillary separation channel, an interferometer, a light source, and at least one photoreceiver. See fig. 1 and the paragraph beginning "Principle of Operation". Krattiger does not explicitly disclose making the excitation beam to be modulated. Faubel discloses in an alternate interferometer that making the excitation

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beam modulated allows one to lock-in to the detected signal, which improves signal analysis (fig. 1 and p. 3557). It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Faubel for the sensor system of Krattiger in order to improve signal analysis.

13. With respect to the sensor system being “microelectronic” or “integrated”, these terms have no explicit structural meaning that reads away from the references.

14. With respect to the different uses of the separation channels, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability. However, see Faubel introduction.

15. With respect to the rate of chopping, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

16. Faubel also teaches the use of argon ion lasers for the excitation beam (p. 3557, col. 1, first full paragraph).

17. With respect to the appropriate optical path distance or choice of laser frequency, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the set forth path distance and laser frequency, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

18. With respect to claims 17, 19, and 24, these claims merely recite an intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

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19. With respect to claim 18, white light is a conventional light source that is less expensive than the lasers of the references. Use of a more inexpensive source of light requires only routine skill in the art.

20. With respect to claim 27, it would appear that both beams of the interferometer are directed into the separation capillary (see fig. 3).

21. With respect to method claim 30 (those limitations not covered above), Krattiger is drawn to the measuring of refractive indexes and any capillary inherently has first end and exit ports. See principle of operation.

22. Claims 1-12, 15, 17-20, 24 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Brandenburg et al (Sensors and Actuators B 38-39, 1997, pp. 266-271) in view Faubel. Brandenburg is being cited and relied on for the first time with this office action.

23. Brandenburg discloses a sensor system comprising a separation channel (for liquid chromatography), an interferometer, a light source, and at least one photoreceiver. See fig. 2 and "Principle of operation" on p. 267. Brandenburg does not explicitly disclose making the excitation beam to be modulated. Faubel discloses in an alternate interferometer that making the excitation beam modulated allows one to lock-in to the detected signal, which improves signal analysis (fig. 1 and p. 3557). It would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Faubel for the sensor system of Krattiger in order to improve signal analysis.

24. With respect to the sensor system being "microelectronic" or "integrated", these terms have no explicit structural meaning that reads away from the references.

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25. With respect to the different uses of the separation channels, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability. However, see Faubel introduction.

26. With respect to the rate of chopping, that is only the intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

27. Faubel also teaches the use of argon ion lasers for the excitation beam (p. 3557, col. 1, first full paragraph).

28. With respect to the appropriate optical path distance or choice of laser frequency, it would have been obvious to one having ordinary skill in the art at the time the invention was made to utilize the set forth path distance and laser frequency, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. In re Aller, 105 USPQ 233.

29. With respect to claims 17, 19, and 24, these claims merely recite an intended use of the apparatus and the intended use need not be given further due consideration in determining patentability.

30. With respect to claim 18, white light is a conventional light source that is less expensive than the lasers of the references. Use of a more inexpensive source of light requires only routine skill in the art.

31. Claims 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over any one of Bornhop, Krattiger, or Brandenburg in view of Faubel as applied to claim 20 above, and further in view of Burns et al (USP 6,379,929 B1).

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32. The references set forth all the limitations of the claims, but did not explicitly set forth the presence of a plurality of sample processing equipment. Burns discloses in an alternate microfluidic device that sample processing equipment such as micro pumps, micro valves, and/or reagent cartridges are conventional in the art (col. 10, lines 39-49; col. 39, lines 1-15; col. 79, lines 10-20). Said processing equipment facilitates the handling of fluids through the lab on a chip device and it would have been obvious to one of ordinary skill in the art at the time the invention was being made to utilize the teaching of Burns for the sensor of any one of Bornhop, Krattiger, or Brandenburg in view of Faubel in order to automate the fluid handling for the sensor.

***Allowable Subject Matter***

33. Claims 28, 29 and 33-35 are allowed.
34. Claims 13, 14, 25, 26, 31, and 32 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
35. The reasons for the allowable subject matter can be found in the previous office action.

***Response to Amendment***

36. The Declaration filed on 12-22-2003 under 37 CFR 1.131 has been considered but is ineffective to overcome the Bornhop reference.
37. The applicant's principle evidence provided for the reduction of practice prior to August 9, 1999 is attachment A. First, the examiner is confused by this document. In box XI, it states



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that the reduction to practice of the invention was July 1994. However, later on in the same attachment (page labeled as "8", actually page 36 of the attachment), the document indicates that work would begin in FY 97. This discrepancy requires clarification.

38. With respect to the filed attachments, the applicant has blacked out the various dates as they are allowed to do under MPEP 715.07. However, applicant has only explicitly identified a few of the blacked out dates as being prior to August 19, 1999. Much of the remaining blacked out dates appear to only correspond to "The Time Period", which only predates the filing date of the instant invention, but has not been identified as predating August 19, 1999. Documents that are not explicitly identified as predating August 19, 1999 do not assist the examiner in determining whether the applicant reduced to practice the invention prior to August 19, 1999, unless the applicant is using those documents to establish due diligence. However, applicant is not permitted to black out dates when establishing due diligence (see MPEP 715.07(a)).

Attachment A appears to be a research proposal, which would establish that the applicant conceived of the invention prior to August 19, 1999. However, research proposals typically set forth work that will be done in the future. It would not however, establish whether the applicant reduced to practice the invention prior to August 19, 1999, which the effective reduction to practice date of Bornhop. MPEP 715.07 specifies the ways to prior inventorship can be shown including establishing a reduction to practice prior to the date of the reference or establishing conception of the invention prior to the reference (which the applicant has done) in combination with a establishment of due diligence of filing the application. It would appear that over 22 months (i.e. August, 1999 to June 2001) separate the reduction to practice and the eventual filing of this application. The examiner requests further evidence establishing either a reduction to

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practice prior to August 19, 1999 or due diligence in filing this application after the reduction to practice.

***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaj Olsen whose telephone number is (571) 272-1344. The examiner can normally be reached on Monday through Thursday from 6:30 A.M. to 4:00 P.M. and on alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen, can be reached on 571-272-1342. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Kaj Olsen Ph.D.  
Primary Examiner  
AU 1753  
March 21, 2004